

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claims 1-20 (Canceled)

21. (Currently Amended) ~~The~~ An apparatus according to ~~claim 19~~ for sensing electromagnetic radiation, comprising:

a detector structure to sense electromagnetic radiation, the detector structure formed on a semiconductor substrate;

a protective window for the detector structure; and

a micromechanical optical imaging system including a lens configured to form an image of a subject to be imaged onto a plane of the detector structure, the lens having a convexity on a side facing away from the detector structure, the lens being arranged relative to the detector structure so that a cavity is between the lens and the detector structure;

wherein the optical imaging system is rigidly joined to the detector structure.

Claim 22 (canceled)

23. (Currently Amended) ~~The~~ An apparatus according to ~~claim 19~~ for sensing electromagnetic radiation, comprising:

a detector structure to sense electromagnetic radiation, the detector structure formed on a semiconductor substrate;

a protective window for the detector structure; and

a micromechanical optical imaging system including a lens configured to form an image of a subject to be imaged onto a plane of the detector structure, the lens having a convexity on a side facing away from the detector structure, the lens being arranged relative to the detector structure so that a cavity is between the lens and the detector structure;

wherein the detector structure includes multiple separate detector elements and the imaging system includes multiple lenses, wherein at least one of the multiple lenses is provided for a group of the detector elements.

24. (Previously Presented) An apparatus for sensing electromagnetic radiation, comprising:
a detector structure to sense electromagnetic radiation, the detector structure formed on a semiconductor substrate;

a micromechanical optical imaging system including a lens configured to form an image of a subject to be imaged onto a plane of the detector structure, the lens having a convexity facing away from the detector structure, wherein the optical imaging system forms a protective window for the detector structure, and wherein the lens is arranged relative to the detector structure so that a cavity is between the lens and the detector structure.

25. (Currently Amended) ~~The An apparatus according to claim 19~~ for sensing electromagnetic radiation, further comprising:

a detector structure to sense electromagnetic radiation, the detector structure formed on a semiconductor substrate;

a protective window for the detector structure;

a micromechanical optical imaging system including a lens configured to form an image of a subject to be imaged onto a plane of the detector structure, the lens having a convexity on a side facing away from the detector structure, the lens being arranged relative to the detector structure so that a cavity is between the lens and the detector structure; and

a protective housing, the optical imaging system being set into the protective housing.

26. (Currently Amended) ~~The An apparatus according to claim 19~~ for sensing electromagnetic radiation, further comprising:

a detector structure to sense electromagnetic radiation, the detector structure formed on a semiconductor substrate;

a protective window for the detector structure;

a micromechanical optical imaging system including a lens configured to form an image of a subject to be imaged onto a plane of the detector structure, the lens having a convexity on a side facing away from the detector structure, the lens being arranged relative to the detector structure so that a cavity is between the lens and the detector

structure; and

spacers provided between the substrate of the detector structure and the optical imaging system.

27. (Currently Amended) ~~The~~ An apparatus ~~according to claim 19~~ for sensing electromagnetic radiation, comprising:

a detector structure to sense electromagnetic radiation, the detector structure formed on a semiconductor substrate;

a protective window for the detector structure; and

a micromechanical optical imaging system including a lens configured to form an image of a subject to be imaged onto a plane of the detector structure, the lens having a convexity on a side facing away from the detector structure, the lens being arranged relative to the detector structure so that a cavity is between the lens and the detector structure;

wherein the detector structure includes multiple separate detector elements, the detector elements being separated from one another by optical partitions.

28. (Previously Presented) The apparatus according to claim 27, wherein the optical partitions are coated to decrease transmission.

Claims 29-31 (Canceled)

32. (Currently Amended) ~~The~~ An apparatus ~~according to claim 29~~ for sensing electromagnetic radiation, comprising:

a detector structure to sense electromagnetic radiation, the detector structure formed on a semiconductor substrate;

a protective window for the detector structure; and

a micromechanical optical imaging system including a lens configured to form an image of a subject to be imaged onto a plane of the detector structure, the lens having a convexity on a side facing away from the detector structure, the lens being arranged relative to the detector structure so that a cavity is between the lens and the detector structure;

wherein the optical imaging system is constructed on a semiconductor substrate,
and
wherein the detector structure is applied on a back side of the substrate of the optical imaging system.

Claim 33 (Canceled)

34. (Currently Amended) ~~The apparatus according to claim 19~~ for sensing electromagnetic radiation, comprising:

a detector structure to sense electromagnetic radiation, the detector structure formed on a semiconductor substrate;

a protective window for the detector structure; and

a micromechanical optical imaging system including a lens configured to form an image of a subject to be imaged onto a plane of the detector structure, the lens having a convexity on a side facing away from the detector structure, the lens being arranged relative to the detector structure so that a cavity is between the lens and the detector structure;

wherein the detector structure includes thermocouples.

35. (Currently Amended) ~~The An apparatus according to claim 19~~ for sensing electromagnetic radiation, comprising:

a detector structure to sense electromagnetic radiation, the detector structure formed on a semiconductor substrate;

a protective window for the detector structure; and

a micromechanical optical imaging system including a lens configured to form an image of a subject to be imaged onto a plane of the detector structure, the lens having a convexity on a side facing away from the detector structure, the lens being arranged relative to the detector structure so that a cavity is between the lens and the detector structure;

wherein the optical imaging system and the detector structure are formed by joining two wafers prior to sectioning.

36. (Previously Presented) A method for producing an apparatus for sensing electromagnetic radiation, comprising:

monolithically producing a micromechanical optical imaging system and a detector structure, a cavity being formed between the detector structure and the optical imaging system, the detector structure for sensing the electromagnetic radiation, the optical imaging system for forming an image of a subject to be imaged onto a plane of the detector structure.